Trigonometry Workbook

Angles in circles

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MATH

ORIENTED ARC FOR A REAL NUMBER

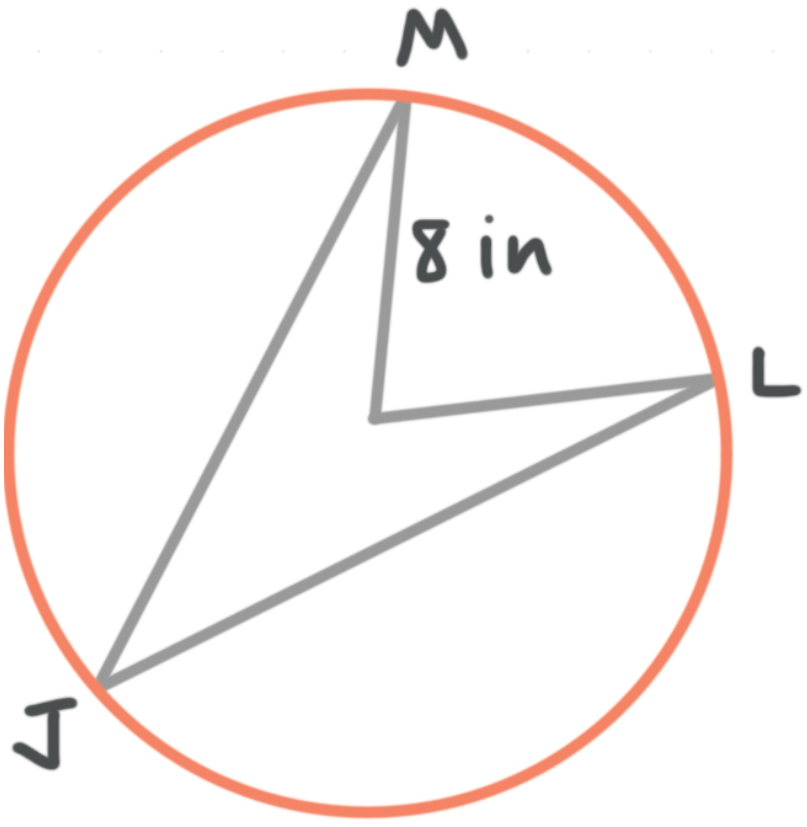
■ 1. Find the approximate length of an oriented arc of the unit circle that corresponds to the DMS angle.

$$\theta = 290°44'24''$$

■ 2. Find the number of rotations (to the nearest integer) associated with an oriented arc with approximate length 63.615.

■ 3. Find the length of arc ML (to the nearest hundredth of an inch) on $\odot L$.

$$m\angle MJL = \frac{\pi}{6}$$



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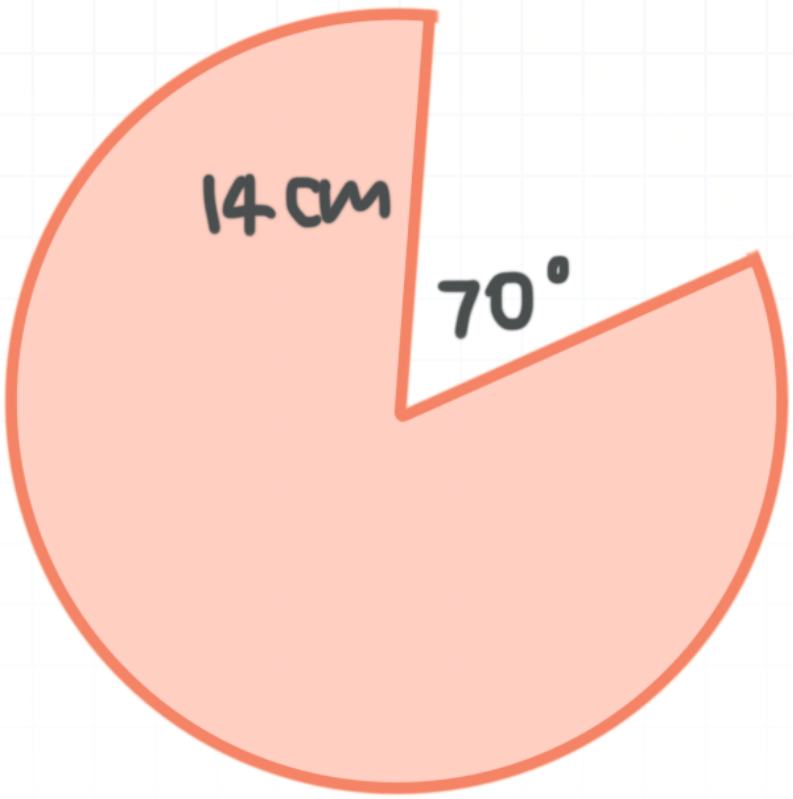
AREA OF A CIRCULAR SECTOR

1. Find the area of the shaded region.



2. Find the area of the shaded region between the concentric circles, if the angle that subtends the arc is $80°$.

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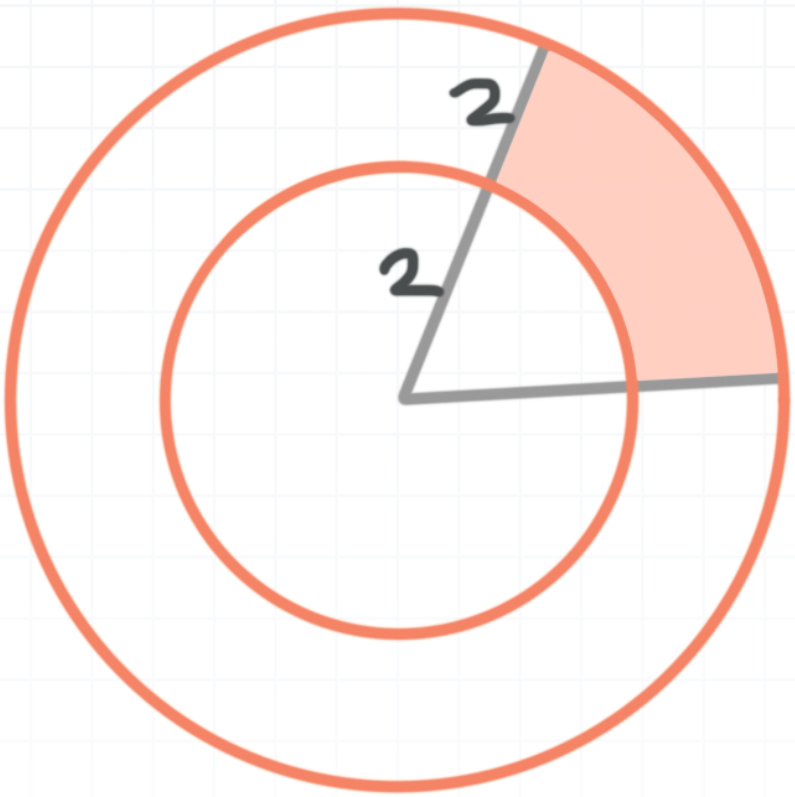

■ 3. A circle passes through $(-5,12)$ and has its center at the origin. Find the area A of a sector of the circle that has a central angle of $2\pi/5$ radians.

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LINEAR AND ANGULAR VELOCITY

1. What is the angular speed, in radians per second, of a wheel that rotates at a constant rate and sweeps out an angle of $33\pi/4$ radians in 0.6 seconds?

2. A saw has a circular blade with diameter 10 inches and it rotates at $5{,}000$ revolutions per minute. Find the approximate linear speed of the saw teeth (in ft/sec) as they contact the wood being cut.

3. The B75 wind turbine has a circular blade with diameter 154 meters that rotates at 18 rotations per minute. Find the angular speed of the blade in degrees per second.

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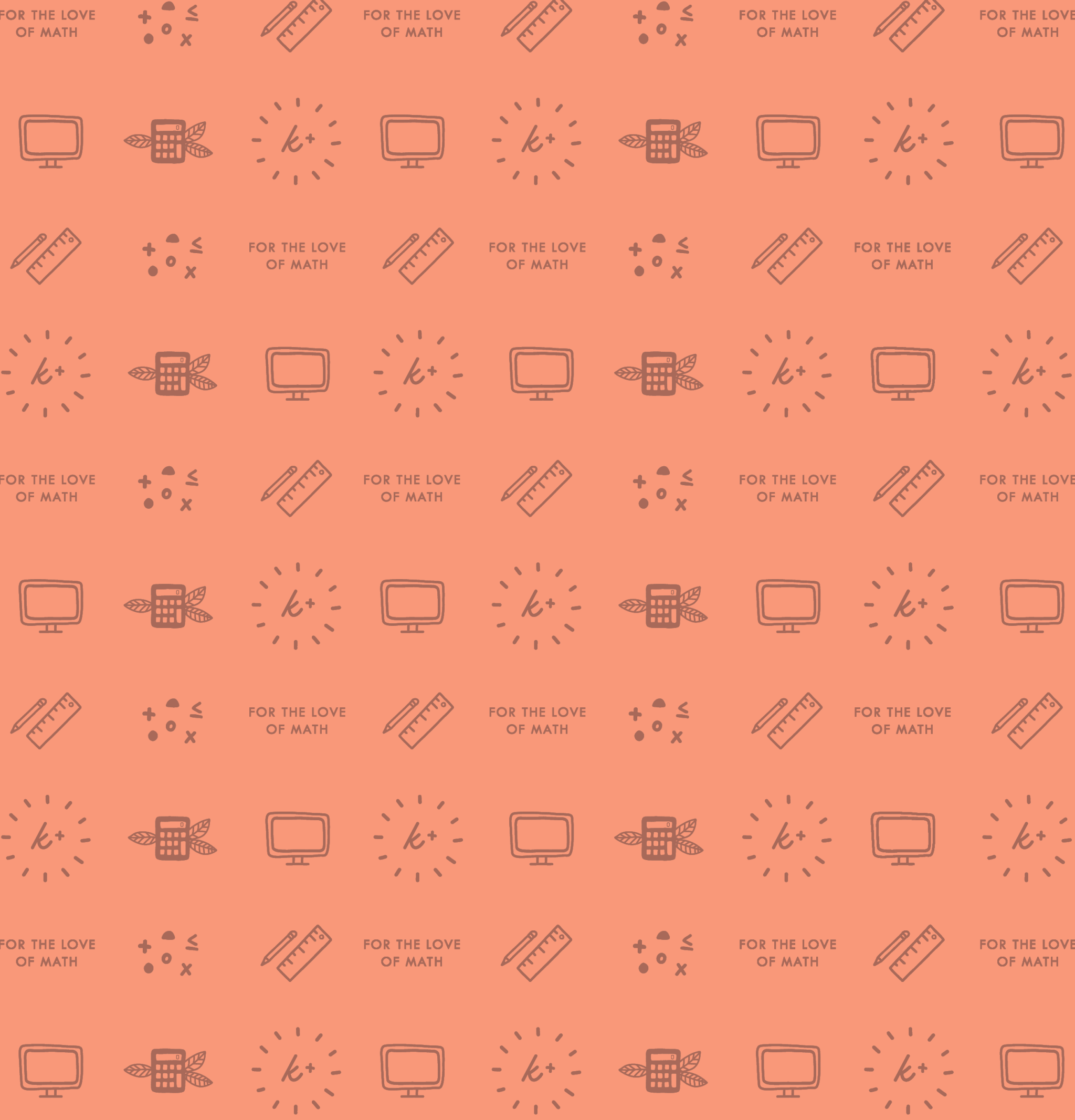
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